Amendments to Claims:

This listing of claims will replace all prior revisions, and listings, of claims in the application:

Listing of Claims:

1-5. (Cancel)

6. (Currently Amended) A method for actively controlling vibration including the steps of:

a. measuring ambient vibration;

b. generating a first command signal based upon said vibration measured in said step a;

c. constraining a first component of the first command signal;

d. ~~determining~~ calculating a residual vibration resulting from the constraint of the first component; and

e. generating a second command signal based upon said residual vibration calculated in said step d.

7. (Original) The method of claim 6 further including the steps of:

f. activating a plurality of force generators based upon said constrained first component and said second command signal.

8. (Original) The method of claim 7 wherein said step c. further includes the step of comparing said first component of the first command signal to a maximum allowable command signal.

9. (Original) The method of claim 8 wherein said step c. further includes the step of reducing the first component to the maximum allowable command signal.

10. (Currently Amended) An active control system comprising:

a ~~A~~ plurality of sensors for measuring ambient vibration;

a ~~A~~ control unit generating a first command signal based upon said vibration measured by said plurality of sensors, constraining a first component of the first command signal, ~~determining~~ calculating a residual vibration resulting from the constraint of the first component and generating a second command signal based upon said calculated residual vibration; and

a ~~A~~ plurality of force generators activated based upon said first command signal, said second command signal and said constrained first component.

11. (Original) The active control system of claim 10 wherein the control unit compares said first component of said first command signal to a maximum allowable command signal.

12. (Currently Amended) The active control system of claim 11 ~~12~~ wherein the control unit reduces the first component to not exceed the maximum allowable command signal.

13. (Currently Amended) A computer readable medium storing a computer program, which when executed by a computer performs the steps of:

a. generating a first command signal based upon measured vibration;

b. constraining a first component of the first command signal;

c. ~~determining~~ calculating a residual vibration resulting from the constraint of the first component;

d. generating a second command signal based upon said residual vibration calculated in said step c.

14. (Original) The computer readable medium of claim 13 which when executed by a computer further performs the steps of:

e. activating a plurality of force generators based upon said first command signal, said constrained first component and said second command signal.

15. (Original) The computer readable medium of claim 13 which when executed by a computer said step b. further includes the step of comparing said first component of the first command signal to a maximum allowable command signal.

16. (Original) The computer readable medium of claim 15 wherein said step c. further includes the step of reducing the first component to the maximum allowable command signal.

17. (New) A method for reducing vibration comprising:

a) sensing ambient vibration;

b) generating a first sensed signal as a function of the sensed ambient vibration;

c) generating a first control command signal as a function of the first sensed signal;

d) constraining a k_{th} component of the first control command signal;

e) calculating a residual resulting from the application of the constrained k_{th} component;

f) generating a second control command signal in response to the residual calculated in step e); and

g) generating a compensating force as a function of the constrained k_{th} component and the second control command signal.

18. (New) The method according to Claim 17, wherein said step d) further includes the steps of:

comparing components, including the k_{th} component, to a maximum threshold; and

scaling the k_{th} component by a constant based upon the k_{th} component exceeding the maximum threshold.

19. (New) The method according to Claim 18 further including the steps of:

generating the constrained k_{th} component $(u_{i,k})_{new}$ in said stcp d), where $(u_{i,k})_{new} = Cu_{i,k}$ and $C = |(u_i)_k| / U_{max}$, and U_{max} is the maximum threshold;

calculating a change in the k_{th} component in the control command signals as a function of $\Delta u_{i,k} = (ui_{,k,})_{new} - u_{i-1,k}$; and

calculating the residual as a function of:

$(z_{i-1})_{new} = (z_{i-1}) + T \cdot \Delta u_{i,k}$.

20. (New) The method according to Claim 17 further including the steps of:

generating a controller weighting matrix;

generating a constraincd control component ($W_{u,new\,k,k}$) as a function of:

$W_{u,new\,k,k} = W_{u\,k,k} + A$,

where A is a constant that greatly exceeds the magnitude of $W_{u\,k,k}$.

21. (New) The method according to Claim 20, further including the steps of:

calculating a new command change ($\Delta u_{i,new}$) as a function of

$\Delta u_{i,new} = D_{new} (W_{u,new}\, u_{i-1} + T^T W_z (Z_{i-1})_{new})$ and where:

$D_{new} = -(T^T W_z T + W_{u,new} + W_{\Delta u})^{-1}$